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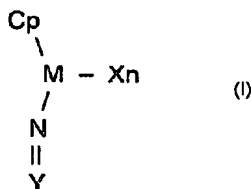
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(54) Title: PROCESS FOR THE PRODUCTION OF A POLYMER COMPRISING MONOMERIC UNITS OF ETHYLENE, AN α -OLEFIN AND A VINYL NORBORNENE



(57) Abstract: The invention relates to a process for the preparation of a polymer comprising monomeric units of ethylene, an α -olefin and a vinyl norbornene applying as a catalyst system: a. a bridged or an group 4 metal containing an unbridged catalyst having a single cyclopentadienyl ligand and a mono substituted nitrogen ligand, wherein said catalyst is defined by the formula (I): b. an aluminoxane activating compound, c. 0 - 0.20 mol per mol of the catalyst of a further activating compound, wherein Y is a substituted carbon or nitrogen atom. The invention further relates to a polymer obtainable with the process of the invention.

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INTERNATIONAL SEARCH REPORT

International Application No

P(VL2004/000458

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C08F210/18 C08F4/642 C08F210/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C08F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; INAGAKI, KATSUNARI ET AL: "Diene-modified ethylene-.alpha.-olefin copolymers and their manufacture" XP002301032 retrieved from STN Database accession no. 1997:618783 abstract & JP 09 241326 A2 (SUMITOMO CHEMICAL CO., LTD.; JAPAN) 16 September 1997 (1997-09-16)	1-10
X	EP 1 162 214 A (NOVA CHEMICALS S.A., SWITZ.) 12 December 2001 (2001-12-12) claims 1,5-7; tables A1-B4b ----- -/--	1-10

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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Z document member of the same patent family

Date of the actual completion of the international search

21 July 2005

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/NL2004/000458

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KRETSCHMER, WINFRIED P. ET AL: "A highly efficient titanium-based olefin polymerization catalyst with a monoanionic iminoimidazolidide .pi.-donor ancillary ligand" CHEMICAL COMMUNICATIONS (CAMBRIDGE, UNITED KINGDOM) , (6), 608-609 CODEN: CHCOFS; ISSN: 1359-7345, 2002, XP008028720 the whole document -----	1-10
X	WO 97/38019 A (UNIROYAL CHEMICAL COMPANY, INC) 16 October 1997 (1997-10-16) page 22, line 21 page 30 examples 5-7; table 3 table 4 examples 45,47,48; table 6 -----	5-10
X	LASAROV, HARRI ET AL: "Ethylene-norbornene terpolymerization with 5-vinyl-2-norbornene using single-site catalysts" MACROMOLECULAR RAPID COMMUNICATIONS , 22(6), 434-438 CODEN: MRCOE3; ISSN: 1022-1336, 2001, XP001038812 the whole document -----	5-10
A	WO 00/11048 A (BROWN STEPHEN JOHN ; NOVA CHEM INT SA (CH)) 2 March 2000 (2000-03-02) page 16 - page 18 -----	1-10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NL2004/000458

Box II Observations where certain claims were found unsearchable (Continuation of Item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of Item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-10 (in part)

the subject matter of claims 1-10 (in part) insofar as it relates to compounds according to Form. I where Y = Form II.

2. claims: 1-10 (in part)

the subject matter of claims 1-10 (in part) insofar as it relates to compounds according to Form. I where Y = Form V.

3. claims: 1-10 (in part)

the subject matter of claims 1-10 (in part) insofar as it relates to compounds according to Form. I where Y = Form VI.

4. claims: 5-10 (in part)

the subject matter of claims 5-10 (in part) excluding the subject matter of groups 1-3.
